Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

EXERCISES.

342

SOLVE the differential equations

$$\frac{d^2y}{dx^2}+\tfrac{1}{2}\left[\frac{1}{x-a}+\frac{1}{x-b}\right]\frac{dy}{dx}-\frac{1}{4\,(x-a)\,(x-b)}\cdot y=0\,,$$

$$\frac{d^2y}{dx^2}+\tfrac{1}{2}\left[\frac{1}{x-a}+\frac{1}{x-b}+\frac{1}{x-c}\right]\frac{dy}{dx}+\frac{-3\,x+a+b+c}{16\,(x-a)\,(x-b)(x-c)}\cdot y=0\,.$$

[*Maxime Bôcher.*]

343

PROVE

$$\sum_{m=0}^{m=n}(-1)^m\frac{2^{2m-1}-1}{(2n-2m+1)\,!}\,\frac{B_m}{(2m)\,!}=0\,,$$

wherein B_m represents Bernouilli's number. [*W. H. Echols.*]

344

IF V be the required result in 336, show that

$$\sum_{r=1}^{r=\infty}\frac{(-1)^{r+1}}{r^2}\,V=\frac{\pi^{2p}}{(2p+1)\,!}\,.$$

[*W. H. Echols.*]

345

FIND loci in space for the movable points A, B, C, and D, such that $AB \times CD$ is always equal to $AC \times BD$. [*Yale Prize Problem.*]

346

A WOODEN hemisphere floats in water, vertex down, with $1/n$ of its axis immersed. Find the specific gravity of the hemisphere.

[*Artemas Martin.*]

347

A DISCOVERS a circular shoal spot 100 yards in diameter, in mid-ocean, and determines the geographical latitude of its centre within 2′, and its longitude within 3′. B attempts to find the shoal again by proceeding to the geographical position assigned to it by A and making a cast of the lead, but he can only determine within 2′ of latitude and 3′ of longitude when he has arrived at the assigned position. What is the probability that he will find it?

[*G. W. Littlehales.*]